



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,412	12/08/2003	Mark A. Ealey	XIN-101J	2452

7590 03/24/2005  
Iandiorio & Teska  
260 Bear Hill Road  
Waltham, MA 02451-1018

EXAMINER

SHAFFER, RICKY D

ART UNIT PAPER NUMBER

2872

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/730,412

Applicant(s)

EALEY, MARK A.

Examiner

Ricky D. Shafer

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 6, 8 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Laakmann ('234).

Laakmann discloses an actuator mirror comprising an optical substrate (69) including a mirror surface (66) on one side and a support structure (24) on the other; and a plurality of actuators (115-119 and 124-127) for controllably altering the shape of said mirror surface (see column 1, line 33 to column 2, line 6), wherein said actuators are embedded in said support and generally parallel to the mirror surface for apply bending moments to said mirror surface. Note figures 4 to 6 along with the associated description thereof.

3. Claims 1-3, 5, 7, 9 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Dongi et al ('519).

Dongi et al discloses an actuator mirror comprising a glass optical substrate (7) including a mirror surface (8) on one side and a support structure (3-6) on the other; and a plurality of actuators (5) for controllably altering the shape of said mirror surface, wherein said actuators are embedded in said support and generally parallel to the mirror surface for apply bending moments to said mirror surface and wherein said support includes an array of intersecting ribs and posts (3) and cathedral ribs (6). Note figures 1 to 5 along with the associated description thereof.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laakmann ('234), or Dongi et al ('519) in view of Shuskus et al ('467).

Laakmann, and Dongi et al each disclose all of the subject matter claimed, note the above explanation, except for the optical substrate being of silicon carbide.

Shuskus teaches it is well known to use silicon carbide in the same field of endeavor for the purpose of its thermal stability characteristics.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical substrate of Laakmann or Dongi et al to include silicon carbide, as taught by Shuskus, in order to increase the mirror's thermal stability to environmental changes.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laakmann ('234) or Dongi et al ('519) in view of Alden et al ('654).

Laakmann and Dongi et al each disclose all of the subject matter claimed, note the above explanation, except for the actuators being of lead magnesium niobate.

Alden et al teaches it is well known to use a lead magnesium niobate material as actuators in the same field of endeavor for the purpose of controlling small changes in the shape of a mirror surface with greater precision.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the actuators of Laakmann or Dongi et al to include a lead magnesium niobate material, as taught by Alden et al, in order to increase the mirror's stability by providing a greater control to the shape of the mirror's reflecting surface.

7. Claims 6, 8 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 2872

9. Claims 1 and 2 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 3 of copending Application No. 10/946,799. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present application (10/730,412) discloses no additional invention or discovery other than what is being claimed in copending Application No. 10/946,799 or what would have been obvious to one of ordinary skill in the art at the time the invention was made.

Copending Application No. 10/946,799 discloses an integrated actuator meniscus mirror comprising an optical substrate including a mirror surface on one side and a support structure on the other; and a plurality of actuators for controllably altering the shape of said mirror surface without a reaction mass, wherein said plurality of actuators are embedded in said support structure spaced from and generally parallel to said mirror surface for applying bending moments to said mirror surface.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ricky D. Shafer whose telephone number is (571) 272-2320. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RDS

March 21, 2005

  
RICKY D. SHAFER  
PATENT EXAMINER  
ART UNIT ~~2507~~ 2872